

# CLAIMS

We claim:

1. A method of making an electric motor, comprising the steps of:

(A) forming a stator by

(1) forming first and second stator core portions;

(2) supporting a coil between the core portions such that the core portions enclose at least part of axial surfaces on the coil;

(B) forming a rotor having a core and a plurality of magnets;

(C) supporting the rotor relative to the stator for relative rotary motion

10 between the rotor and the stator such that the plurality of magnets of the rotor interact with the stator core portions during relative rotary motion between the stator and the rotor.

2. The method of claim 1, wherein step (A) includes supporting the core portions  
15 and the coil between two support members that enclose at least part of outward axial surfaces of the core portions.

3. The method of claim 2, including supporting a plurality of magnetic core members by the support members.

20 4. The method of claim 3, including providing a plurality of slots on the support members and inserting the magnetic core members in corresponding ones of the slots.

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5. The method of claim 1, wherein step (A) includes forming each core portion such that each includes a generally annular ring and a plurality of circumferentially spaced projections that project radially inward from the ring.

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6. The method of claim 5, including providing two support members with a plurality of radially inwardly projecting spacer portions and interspersing the core portion projections and the spacer portions such that outward axial surfaces on the core projections are not covered by the support members.

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7. The method of claim 6, including forming a plurality of slots in the support members and inserting at least one magnetic core member into each of at least some of the slots.

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8. The method of claim 1, including assembling a plurality of rotors and a corresponding plurality of stators to thereby form a multiphase motor.

9. The method of claim 1, wherein step (A) includes applying a bonding agent to the stator after performing substeps (1) and (2).

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10. A motor assembly comprising:

a stator having first and second stator core portions and a coil supported between the core portions such that at least part of axial surfaces on the coil are covered by the core portions;

5 a rotor having a core and a plurality of magnets, the stator and rotor being supported for relative rotary motion between the rotor and the stator such that the plurality of magnets of the rotor interact with the stator core portions during such relative rotary motion.

10 11. The assembly of claim 10, including two support members that enclose at least part of outward axial surfaces of the core portions.

12. The assembly of claim 11, including a plurality of magnetic core members supported by the support members.

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13. The assembly of claim 12, including a plurality of slots on the support members and wherein the magnetic core members are received in corresponding ones of the slots.

14. The assembly of claim 10, wherein each stator core portion comprises sintered  
20 powder material.

15. The assembly of claim 10, wherein each stator core portion comprises a laminated ring.

16. The assembly of claim 10, wherein each stator core includes a generally annular ring and a plurality of circumferentially spaced projections that project radially inward from the ring.

17. The assembly of claim 16, including two support members with a plurality of radially inwardly projecting spacer portions and wherein the stator core portion projections and the spacer portions are interspersed such that outward axial surfaces on the core projections are not covered by the support members.

18. The assembly of claim 17, including a plurality of slots in the support members and inserting at least one magnetic core member into each of at least some of the slots.

19. The assembly of claim 10, including a bonding agent on the stator.